Chapter Three

PURSUING ECONOMIC SECURITY

Much of the popular discussion of U.S. economic security focuses on the relative standing of the U.S. economy and of firms operating in the United States: Are they bigger, more productive, more innovative, etc., than foreign economies and firms operating abroad? Closely related are concerns about who controls important economic assets. Also prominent in the popular debate are questions about what is required to maintain U.S. military forces adequate to meet foreign challenges. Economic security, it seems, is naturally discussed today in terms of international competition and comparisons.

This focus on competition and comparisons reflects in part the habits we have learned in thinking about military security. Military security is inherently a competitive matter: The bigger, faster, or technologically superior force often wins. But there is more to this concern with relative standing than just habit. Some aspects of economic security really are advanced by being bigger, richer, more clever, or more productive or by exercising more control than someone else. In this section, we consider the pursuit of economic security through relative economic performance.

THE IMPORTANCE OF RELATIVE SIZE

In a recent book, Robert Reich recounts that for some time now he has been asking students "whether they would prefer living in a world in which every U.S. resident is 25 percent wealthier than now and every Japanese is much wealthier than the average U.S. resident, or in one in which U.S. residents are only 10 percent wealthier than

now but ahead of the average Japanese."[1] He reports that a large number vote for the second option.

In the standard economic way of thinking, choosing the second option makes no sense. Why should the United States accept a sizable decrement in its standard of living just to be better off than the Japanese? For most purposes, it probably makes no difference whether U.S. residents are richer than Japanese; how much bigger the U.S. economy is than the Japanese economy; or who produces more cars, computers, or rice. We live in an integrated world economy. What is produced in Japan is typically available in the United States, and vice versa. If our principal concern is prosperity, what matters at the end of the day is what goods and services are available for us to consume or to invest in future production. The aim should be to maximize individual incomes, a measure of the total volume of goods and services one can command.

The fact that many Americans say they would be willing to sacrifice considerable income just to stay ahead of the Japanese is perhaps nothing more than a reflection of understandable (and not necessarily undesirable) national pride. We like to know that Americans are the biggest or the best, even if being so does nothing to make our lives immediately or materially better. It may also reflect, though, the perfectly rational realization that for some purposes there is a real advantage to being not just big or rich, but bigger or richer than somebody else. Later in this report, we will address the question of how to measure economic size and how these measurements relate to the economic instruments that can be utilized in support of national security policy.[2]

Who Makes the Rules?

Relative size is important, for example, when it comes to setting international rules. As a practical matter, the United States enjoys the power to veto any proposed agreement on international trading

[1]Robert B. Reich, *The Work of Nations*, Alfred A. Knopf, New York, 1991, p. 308.

[2]See Chapter Five.

rules. The United States is the world's largest trader,[3] and no general agreement on international trading rules would mean anything if it were not adhered to by the United States. As a consequence, the United States enjoys considerable leverage (at least of a negative sort) in shaping international trading rules. Recently, the United States has exercised this leverage to advance the economic interests of U.S. farmers, refusing to subscribe to a general trade agreement unless it includes limitations on foreign agricultural subsidies.

The countries of the European Union (EU), now acting as a unit for the purposes of trade negotiations, constitute an economic entity similar to the United States with regard to size and importance in world trade. As a unit, the EU too has the power to veto trade agreements, a power that none of its constituent countries enjoyed individually. Recently, the EU has exercised this power to defend the interests of its own farmers. The result was a prolonged impasse in the recent round of General Agreement on Tariffs and Trade (GATT) negotiations over the issue of farm subsidies.

It is easy to think of other cases in which simple size has allowed countries to make and to enforce rules of international economic behavior. Because it could easily expand its own production when necessary and because it was rich enough to absorb the financial consequences of reducing its output when necessary, Saudi Arabia was able for a decade to act as the world's swing producer of oil, setting world oil prices and maintaining production discipline within the Organization of Petroleum Exporting Countries (OPEC). Because the United States is such a large market for tuna, it has been able to demand that foreign tuna-fishing fleets use techniques that do not endanger dolphins. Being biggest or best in economic and industrial dimensions does sometimes help a country to get its way.

Relative size also provides obvious advantages in fielding military forces. The United States enjoys nearly unchallenged military supremacy in the world today, partly because no other nation comes

[3]In 1992, the United States accounted for 12 percent of total world merchandise exports and nearly 15 percent of total merchandise imports.

close to being able to match the resources the United States devotes to military activities.[4]

Rebuilding the European and Asian economies that had been devastated by World War II was, of course, a conscious objective of U.S. foreign and economic policy. The growth of these economies (and the algebraically inevitable relative diminishment of the U.S. economy) has served important U.S. interests. Economic recovery in Europe contributed to political and military stability there, which in turn allowed U.S. attention to be focused elsewhere. Japan and Western Europe served as clear demonstrations that capitalist and democratic systems could produce both robust economic growth and social equity. These rebuilt economies provided the economic underpinnings for powerful alliances that supported U.S. interests during the Cold War. Although differences that in the past were swept under the rug in the interests of alliance unity may now be more visible, the advanced industrialized and democratic nations continue to hold many interests in common. The United States can expect continuing support from Europe and Japan on many issues.

Today, the United States has an interest in promoting economic growth in the developing world and in formerly socialist countries—for the same sorts of reasons that it had an interest in rebuilding Europe and Japan. If the share of the world economy accounted for by the United States shrinks a bit further because its efforts to spur economic growth in these countries are successful, we should probably not be concerned. Few would argue that U.S. interests would have been better served if the U.S. economy stood today in the same relation to other economies that it did in, say, 1950.

As much as economic growth abroad has served and will continue to serve U.S. interests, the relative diminishment of the United States in economic terms has some negative consequences—for the United States and possibly for the world. By and large, the United States has been a benevolent and effective maker of international economic rules. International economic institutions and arrangements that were created as a result of U.S. economic leadership—for example, the World Bank, the International Monetary Fund, the GATT, the

[4]One could, of course, imagine alliances of nations that could field military forces comparable to our own, but this would require a good imagination.

Bretton Woods exchange-rate system—have served the world well. In some cases, the United States unilaterally preserved these institutions and arrangements—often simply by absorbing the consequences of other nations' deviations from agreed-upon rules. To some observers, it is not a coincidence that international cooperation in economic matters has become more problematic in recent years as U.S. economic dominance has become less pronounced. Witness the slow progress of the Uruguay Round of trade negotiations; squabbling about which countries' interest rates, budget deficits, or current account imbalances are too high or too large; difficulties in agreeing on global environmental standards; problems in sharing responsibility for assisting the reform of formerly socialist economies. If the United States will no longer be in a position to establish and enforce the international economic rules of the game, who will be? Will anybody be? And what reason is there to think that rules made jointly or by somebody else will be better—for the United States or for the world—than the rules that were made by the United States when it was more dominant economically than it is today? It is easy to understand why some observers—including some quite sophisticated ones—are less than completely comfortable with the prospect that the United States will account for a smaller share of the world economy.

Public and Private Size

Just as we derive some advantages from the relative size and wealth of the U.S. national economy, as a nation we may also derive advantages from the preeminence of some firms and enterprises operating in the United States.[5] Large firms, firms with large market shares,

[5]In today's environment, it makes more sense to speak of "firms operating in the United States" rather than "U.S. firms." For most public policy purposes, what we care about is whether a firm is supplying jobs locally, whether it is paying taxes locally, whether its output could be denied us in some international crisis, and so on. These are determined much more by the location of a firm's operations—where it does its manufacturing, where it keeps its inventories, where it does its research and development (R&D), etc.—than by where it is incorporated, where its headquarters building is, whether its name sounds American, what stock exchange its shares are traded on, or whatever other characteristic one might use to identify an "American firm." We also have an interest in who owns the firm—in who gets the profits. But today, ownership—at least of large firms whose shares are publicly traded—will not be confined to or perhaps even concentrated in any single country. In today's world, it makes little

firms that can produce at lower cost, or firms that possess superior technology or know-how may also enjoy some advantages in bargaining with other firms—with suppliers, with customers, or with competitors.[6] To the extent that advantaged firms are located in the United States and the firms they bargain with operate abroad, this bargaining leverage may yield net advantages for Americans in the form of higher wages, increased tax payments, or (if the owners are American) increased profits.

Staying Number One

We may, then, have a legitimate concern not only about how big or how rich (or how innovative, how resilient, how flexible, etc.) the U.S. economy and the enterprises that make it up are in absolute terms but also about how big or how rich (etc.) they are compared to other countries and other enterprises. Is it worth giving up 15 percent of U.S. gross domestic product (GDP) (to return to Reich's example) just to be ahead of the Japanese? Probably not. But is it worth giving up some smaller amount of consumption, using the resources for investment or to create an environment more conducive to successful economic activity, to maintain the United States as the world's economic leader? Possibly.

That the United States in recent years has been devoting a smaller share of GDP to saving and investment and a larger share to consumption than have other industrialized nations is a widely noted fact. National saving and investment rates in 1990, for example, are shown in Table 1.

In one sense, this should not be a cause for concern. The division of national income between current consumption and investment for the future reflects individual and collective preferences for current versus future income. Aggregate levels of saving and consumption are the results of decisions by individual households and firms and of collective decisions regarding government budget policies. No outside power is forcing U.S. residents to consume rather than save. They are saving—at least roughly—as much as they want to save.

sense to try to attach a national label to large firms with shareholders, workers, managers, and operations scattered around the world.

[6]None of these attributes *ensures* either a competitive or a bargaining advantage, of course. It is not hard to think of large firms, for example, that have fared poorly in recent years.

Table 1

Saving and Investment in Industrialized Countries, 1990 (as percentages of GDP)

	National Saving	Gross Fixed Capital Formation
United States	14.3	17.0
Canada	18.0	21.5
Japan	34.4	32.6
Germany	25.0	21.4
France	21.1	22.1
Italy	19.5	20.7
United Kingdom	15.6	19.2
European Union	21.2	21.4

SOURCES: OECD and IMF

NOTE: These 1990 rates are roughly characteristic for the entire decade of the 1980s.

But if current patterns of consumption, saving, and investment are maintained, economic growth in the United States will almost certainly be slower than growth in much of the rest of the industrialized world, and the relative size of the U.S. economy will decline yet further. If the relative size does contribute to economic security (and we have argued that it does), then the pursuit of economic security provides a rationale for encouraging saving and investment in areas that will contribute to the longer-term growth of the U.S. economy. Proposed actions to achieve these ends are numerous: Reduce government spending for current consumption; increase government spending for infrastructure investment; raise taxes to reduce government deficits and to curtail private consumption; change tax laws to encourage private saving and investment; discourage investment in "nonproductive" assets, such as housing; encourage investment in R&D, plant and equipment, and education and training; and so on. A consensus in favor of policies to increase saving and investment in the United States—necessarily at the expense of some current consumption—seems to be forming. (There is, of course, still heated debate over precisely what or whose current consumption should be sacrificed to achieve this end.) In part, this increased national inter-

est in saving and investment reflects a changing assessment of the relative worth of current versus future consumption—a growing suspicion that if more is not invested today, U.S. living standards may be unacceptable in the future. But it also reflects a growing concern about the relative place of the United States in the world economy. As Reich's anecdote suggests, Americans do see value in being number one, and they appear to be willing to make some sacrifices to retain this ranking.

More technically, the potential benefits that stem from the relative size of the U.S. economy are true public goods. Most U.S. residents stand to benefit, for example, from the leverage in international negotiations that relative size creates, whether or not they have individually contributed to maintaining this relative size.[7] As a result, private incentives to engage in the kinds of activities—saving and investment, for example—that will make the economy grow will not bring about the optimal level of such activities. In fulfilling its responsibility to promote the public interest, then, governments should arguably take steps—in the allocation of public spending, the design of tax policies, etc.—to encourage higher levels of saving, investment, education, R&D, and other activities that will contribute to national economic growth than will grow out of purely private decisionmaking.

Beyond trying to spur economic growth in the United States, should we also seek to slow the growth of other nations? In rare situations, perhaps. From time to time, the U.S. government has adopted policies aimed specifically at retarding the economic growth of other nations. We maintain restrictions on economic dealings with a few countries (Iraq, Cuba, Libya, North Korea, and Serbia, for example). Partly, these restrictions are meant to provide leverage for influencing the behavior of these countries: Cooperate and we will ease this or that restriction.[8] Principally, though, restrictions are intended to weaken the target economies and hasten the downfall of regimes considered undesirable.

[7]Assuming, perhaps optimistically, that U.S. negotiators use this leverage wisely enough to generate benefits for most of the U.S. population.

[8]We take up the use of economic means to achieve traditional policy ends in more detail in Chapter Five.

It seems improbable, though, that the U.S. government would ever seek actively to undermine the general economy of any more-or-less friendly nation or to hinder specific firms operating there. In most cases, doing so would threaten its own interests. If the target country were large, the United States might risk retaliation. More important, U.S. producers would likely suffer as less-prosperous foreigners bought fewer U.S.-made goods. U.S. consumers, too, would suffer if foreign-made goods were not as available or as attractive as they might have been. In general, U.S. prosperity is enhanced by the prosperity of other countries.

As a practical matter, concerns over relative size and relative standing in particular markets or industries will motivate government policies designed not so much to hinder foreign economic activity as to promote or encourage U.S. activity. We may note, for example, that foreign producers are outpacing U.S. producers in particular industries, and therefore consider government assistance for U.S. firms in these same industries.[9] Similarly, the recognition that other economies are investing a larger share of their incomes than U.S. residents are and may therefore be expected to grow more rapidly in coming years may spur us to change tax laws or government spending programs to encourage more saving and investment. For the most part, then, more rapid growth in other countries should be seen as creating examples to be considered and possibly to be emulated rather than targets to be attacked.

SUPPORT FOR SPECIFIC INDUSTRIES

No one doubts the importance of government efforts to make the overall economic climate more conducive to investment, innovation, productivity improvements, and economic growth. Policies to reduce government deficits, boost domestic saving, create more highly skilled work forces, encourage entrepreneurial risk taking, etc., are on nearly everybody's lists of What Governments Ought To Be Doing. Much more controversial, however, are government efforts to provide special support for or to promote the growth of particular industries.

[9]We discuss below the difficulty of identifying circumstances that may justify such assistance.

We have heard much in recent years about the potential benefits and dangers of "industrial policies" and "strategic trade policies" (the names commonly attached to efforts to promote the fortunes of particular industries in, respectively, domestic and international markets). Governmental support for the European Airbus consortium and Japanese support for the supercomputer and semiconductor industries are cited variously as models of effective government pursuit of national economic interests, as serious threats to the international trading order, and as ineffective wastes of taxpayers' money. Similarly, the alleged failure of the U.S. government to provide support or protection for "key" U.S. industries is seen alternatively as a dismal shirking of governmental responsibility, a wise refusal by the government to get involved in matters better left to private decisionmakers, or a complete misunderstanding of what the U.S. government is really doing. Some argue that the combination of (alleged) foreign activism and (alleged) U.S. government inaction threatens the international competitiveness of firms operating in the United States and that U.S. economic interests—and therefore U.S. economic security—will suffer as a result. Others argue that increased government support for particular industries—governmental "picking of winners and losers" is how such efforts are often characterized by opponents—will only slow the growth of the U.S. economy, risk setting off international disputes about what constitutes "fair" support for particular industries, and therefore itself constitute a threat to U.S. economic security. There is wide agreement, though, that policies adopted by one nation to support specific industries or economic activities will often have consequences for other nations. Consequently, a workable strategy for promoting U.S. economic security must include some notion of when the U.S. government should provide assistance to specific industries and when it should oppose similar actions by other governments.

More precisely, policymakers must come to grips with four basic questions: When does the pursuit of U.S. economic interests require government support for particular industries? Can such support be effectively provided, and if so, how? In what circumstances will foreign support for particular industries threaten U.S. interests? And how can the U.S. government best counter undesirable policies by foreign governments? We deal with each of these questions in turn.

When Is Special Support Justified?

One possible justification for government support for a particular industry is the presence of significant economies of scale. A firm or an industry is said to exhibit economies of scale if, once some minimum level of operations is achieved, succeeding increments to output come at lower cost—if it is cheaper to produce the one-thousandth copy of an item than the one-hundredth, cheaper to make the one-millionth than the ten-thousandth, and so on. Economies of scale are most likely to be found in industries where large up-front investments in production facilities, R&D, distribution network development, etc., are required before large-scale production is possible. The longer the production run over which these initial costs can be amortized, the lower the average cost of all the units produced. The belief is widespread (although not fully substantiated yet by careful analysis) that economies of scale are particularly characteristic of modern, high-technology, research-intensive industries. Certainly, though, some older, "smoke-stack" industries—autos, steel, and shipbuilding come immediately to mind—also show significant economies of scale.

The significance of economies of scale lies in the fact that a firm that captures an early market share may be the first to achieve efficient scale and may therefore enjoy a significant cost advantage over competitors stuck at lower rates of production. This advantage may allow the leading firm to undersell its competition and to capture an even larger share of the market, which may in turn create an even greater cost advantage, and so on. None of the steps in this chain happens automatically, of course, and there is no guarantee that capturing a large share of the early market for a product will allow a firm to dominate its industry. Neither are the competitive advantages that arise from large-scale production necessarily permanent; it is easy to think of firms that once enjoyed significant cost advantages and came to dominate their industries, only to be surpassed by a new or particularly hard-charging competitor. Nonetheless, in industries where economies of scale are important, capturing a large market share can yield significant competitive advantages.

What makes economies of scale relevant to considerations of economic security is that economic advantages may accrue to the nation whose firms can capture market share and the attendant competitive

advantages. Firms may enjoy larger profits. Wages for workers may rise. Tax revenues may increase. Governments may, therefore, have an interest—some would say a responsibility—to do what they can to help firms that operate locally (rather than firms that operate principally in other countries) to capture economies of scale.

Assistance may take the form of direct subsidies for R&D or for production, which will allow firms to cut prices and gain market share. (Airbus, for example, is gaining international market share as a consequence of government subsidies.) Alternatively, support could come in the form of large public-sector purchases that will help establish efficient-scale operations. (This is the classic "infant industry" policy: Support an infant until it is strong enough to stand on its own. The U.S. aerospace industry is widely thought to have been helped by large government purchases of military systems.) Finally, support may take the form of restrictions on imports so that the home-country firm can rely on a secure domestic market as a base on which to build total market share. (Japan is frequently accused of adopting such policies.)

Nothing comes free, of course. Special assistance for particular firms or industries necessarily comes at a cost to consumers or to other industries. These costs may be either direct (taxes to finance subsidies) or indirect (higher prices for imported goods or higher interest rates if subsidies are financed by government borrowing), but they will certainly be real. The simple fact that industries targeted for special assistance do in fact achieve a competitive advantage over foreign firms does not suffice to prove that the government programs that promoted this outcome were effective or worthwhile. A complete accounting of the value of government intervention must include consideration of what happened to industries and interests *not* target for special assistance and of what might reasonably have been expected to happen in the absence of intervention.[10]

[10]In the 1960s and 1970s, the Japanese government aggressively supported the growth of the Japanese steel industry. Japanese steel producers did in fact capture a very large share of the world steel market, but subsequent analyses have shown that the gains that accrued to the Japanese economy from this competitive victory were less than the returns that could have been expected if the resources used to promote the steel industry had been left in the hands of private investors. In retrospect, it appears that the government program did more harm than good. See Paul R. Krugman, "Targeted Industrial Policies: Theory and Evidence," in Dominick Salvatore, ed., *The New Protectionist Threat to World Welfare*, North-Holland, 1987.

Special support for industries or firms may also be justified if the actions or activities of one industry or firm will provide important benefits for other industries and firms. These benefits might take the form of transfers of special skills or technical know-how that are facilitated by proximity. Technical know-how that is embodied in the knowledge and skills of individual workers, for example, may be transferred from one firm to another as workers leave one job and take another. This job changing and the associated technical cross-fertilization will arguably be more frequent if a number of firms employing similar kinds of workers are located close together, so that changing jobs does not require selling a house, uprooting a family, etc. Similarly, technical know-how may spread through casual contacts among workers in different firms. Such mechanisms may create a "beehive effect" whereby a number of similar firms located close together mutually support each other. The common example of such an agglomeration of similar firms is California's Silicon Valley.[11]

On a larger scale, one might hypothesize that "local" spillovers of technical know-how extend as far as an entire country. Despite rapidly improving communication, some kinds of know-how can be transmitted effectively only through direct personal contact. Direct consultation and movements of workers are, of course, much easier when there is no need to cross national, cultural, and linguistic boundaries. Thus, it is conceivable that governments have an interest in promoting the sorts of industries that create or rely on know-how of a sort that is not easily transmitted impersonally. Technological innovations relevant to such industries that are made abroad may not be as available, for example, to U.S. firms as would be similar innovations made in the United States. The United States might, then, prefer that these innovations be made here and therefore may wish to encourage the kinds of activity that would generate innovation.

[11]Silicon Valley, however, is a classic example of a strongly self-reinforcing industrial complex that arose *without* any intentional government assistance. Although it is a valid theoretical proposition that government assistance *could* make other Silicon Valleys more likely, it is hard to see how targeted government assistance could have improved the original.

A related concern has to do with access to new and emerging technologies and products. Almost by definition, information about new technologies and products will be imperfect. It takes time for information to spread; information about new products will not be as fully disseminated as information about older, more established products. There is presumably some advantage in getting information about new products and technologies earlier rather than later; other products can be designed, for example, to take advantage of capabilities that will be offered by an about-to-be-marketed component. To the extent that information about new capabilities and designs spreads first to other firms that are "local" in geographical, cultural, or linguistic senses, there may be a justification for government efforts to encourage the "local" (i.e., in this country) establishment of the firms expected to produce new and more capable components.

The fact that the output of an industry serves as an input to other industries is not, in itself, a justification for special support. One cannot argue, for example, that, simply because many industries in the United States use steel, special support should be provided for the steel industry or that, because the computer industry requires lots of semiconductors, the chip industry should be promoted. To make a case for special support, it is also necessary to argue that the benefits generated by an industry are not fully captured by firms in that industry and are therefore not taken fully into account when decisions are made about production levels. Only when a market failure of some sort can be demonstrated—a failure of the full costs and benefits of some activity to be felt by those engaging in it—is there even a chance of making a credible case for special government support.[12] Similarly, arguments that an industry is likely to show rapid growth in the future are not sufficient to justify special support. Again, it must be demonstrated that prices charged and paid in market transactions will systematically fail to reflect the true value of the output.

[12]The standard case for government support of R&D efforts, for example, rests on the assertion that the full benefits of R&D activity cannot be captured by the firm doing the R&D. Despite patent protection and licensing arrangements, other firms are likely to share in the benefits generated by technological innovations. Since some of the benefits are likely to available for free, firms may be tempted to let someone else perform the expensive and risky R&D. Without some additional encouragement in the form of government support, the result is likely to be lower levels of R&D activity than would be justified by the total benefits resulting from such activity.

Practical Problems

The logic of the above arguments for governmental support of certain industries is well established and widely accepted. Applying this logic to particular cases, however, has proved exceedingly difficult. Arguments in favor of special support for particular industries must usually be prospective in nature: If scale is increased, costs are *expected* to come down; if costs come down, a firm is *expected* to capture a greater market share; if the firm gains a larger market share, benefits are *expected* in the form of higher profits, higher wages, or increased tax revenues; technical know-how is *expected* to be transmitted among firms without compensation to the originating firm when it will be valuable to other firms. The government also must project the consequences of intervention: It must believe in advance that subsidies or protection from foreign competition will in fact generate the economies of scale or the positive externalities that are theoretically possible. It is also necessary to believe that actions by one government to promote the growth of certain of its industries will not be countered by actions by another government seeking to support its own industries.[13] All of this is necessarily speculative. That the net social benefits arising out of special support for selected industries will outweigh the costs of such support is by no means easy to establish in specific cases.

Even with the benefit of hindsight, it is difficult to establish that government support for particular industries has been worth the cost. (It is always hard to know what would have happened in the absence of special government support.) The result is that we simply do not know how often the circumstances that will allow beneficial government intervention do in fact arise, or how long we can expect benefits generated by government intervention to last before other governments take actions to capture similar benefits for their own firms. In the absence of clear evidence—either prospectively or retrospectively—that government support for specific industries can be

[13]Intentionally or otherwise, large-volume purchases of aircraft by the U.S. government may have provided an important boost for U.S. engine and airframe manufacturers. The subsidies being poured into the Airbus consortium by European governments appear to be eroding the advantages previously enjoyed by the U.S. aerospace industry.

beneficial, some skepticism about such support is probably warranted.[14]

Because it is so hard to base decisions about government support for specific industries on verifiable fact, such decisions must inevitably be based to a large degree on opinion. And when opinion serves as the basis for government decisionmaking, the door is opened for special pleading by every industry to which the arguments for special support might plausibly apply.

In the face of such difficulties and to preserve some appearance of objectivity and freedom from special pleading, it has become common in the last few years to appoint blue-ribbon panels, commissions, or committees charged with identifying "critical technologies" deserving of special care and support.[15] Typically, these panels, commissions, and committees have been rather vague in specifying the criteria by which technologies are judged to be critical.[16] None, to our knowledge, has specifically recognized the centrality of market failure as the indicator that government action is necessary or potentially valuable. For the most part, they have concentrated their efforts on forecasting which technologies will show the most rapid

[14]Some skepticism is warranted also with regard to governmental actions aimed at making the overall economic climate more conducive to investment, innovation, increases in productivity, and economic growth. These actions—reducing government deficits, encouraging education and training, adjusting product liability laws, regulating capital markets, and so on—typically impose costs on somebody, and we must of course ask whether the benefits of these actions really do outweigh their costs. The preference that many economists show for general rather than industry- or sector-specific policies seems to arise from a sense (as opposed to a clearly demonstrable fact) that the task of making general policy is somehow simpler and more likely to be accomplished successfully than that of making policy to aid a specific industry or sector. (At the very least, there is no need to choose which industry or sector to support.)

[15]Since the late 1980s, more than a dozen lists of "critical technologies" have been generated in the United States. The sponsors of critical-technology lists have included the Department of Defense (DoD), the Department of Commerce, the White House–organized National Critical Technology Panels, the private-sector Council on Competitiveness, and organizations representing the aerospace and computer industries.

[16]They have also been vague about defining just what constitutes a "technology." A quick survey of these lists reveals some confusion about whether support is being proposed for "technologies," "industries," "industrial sectors," or branches of "science." A possibly apocryphal but accurate characterization of critical-technology lists to date is that they can include everything from "physics to batteries." We are grateful to our RAND colleague Bruce Bimber for this telling anecdote.

development in coming years or which will contribute most importantly to lower production costs in a variety of industries.[17] These considerations are not entirely irrelevant to the search for market failures, but the final step of actually trying to identify specific cases where markets will incorrectly value products seems not to have been taken.

The lists of critical technologies that have resulted from these exercises have typically been very broad, seemingly excluding few technologies. If the recommendations of these panels were acted upon, the resulting policies would amount to generalized support for all R&D rather than special help for a few selected industries. General assistance is almost certainly the preferable course, and the panels and commissions may ultimately have served a useful function, even if unwittingly.

When Are Foreign Industrial Policies Contrary to U.S. Interests?

But these are the cautions of academics. Despite the flimsiness of the case in favor of government support for particular industries, governments all over the world have embarked on policies of aggressive support for favored industries. Do such policies threaten U.S. interests? In some cases, obviously not. Efforts by the government of Brazil, to pick an extreme example, to increase the productivity of Brazilian coffee growers will likely benefit U.S. consumers and are unlikely to do serious harm to any other domestic interest since the United States has no coffee-growing industry. European subsidies for grain growers and Japanese subsidies and protection for rice producers, however, may be an entirely different story. When should the United States be concerned about foreign industrial policies?

The United States should resist or seek to counter foreign industrial policies whenever there is a real prospect that these efforts may cre

[17]These are among the more sensible criteria advanced. Some efforts to identify critical technologies have focused on the contribution of particular technologies to job growth or to reducing the trade deficit. Employment levels and external balances, of course, are determined principally by macroeconomic policies and conditions and are not influenced importantly by developments in specific sectors of the economy.

ate a foreign monopoly that will one day allow foreigners to collect monopoly profits from the U.S. population.[18] Dominance in a particular industry by producers operating in a single foreign country may also heighten somewhat the risk that U.S. buyers may face supply interruptions in a time of international crisis. In practice, we should probably view with suspicion any foreign subsidy to industries that might plausibly show significant economies of scale.

The United States should also resist foreign subsidies that may displace U.S. producers in world markets without bringing any price reductions for U.S. consumers. Foreign agricultural subsidies, for example, are damaging to U.S. interests, because they allow subsidized foreign farmers to capture third-country markets that might otherwise have been won by U.S. growers. Because U.S. government programs place a floor under prices for many farm commodities in the United States, foreign subsidies generally do little to reduce costs faced by U.S. consumers. Thus, as a result of foreign subsidies, U.S. producers lose and U.S. consumers do not gain—a situation that is clearly counter to overall U.S. interests.

The situation is more complicated when foreign policies do benefit U.S. consumers. If there is reason to believe that the benefits that accrue to consumers are only temporary and will evaporate if and when U.S. or other producers are driven from the market, the United States should of course oppose the foreign efforts to support a particular industry. But clear examples of such predation—cutting prices long enough to drive competitors out of business and then raising prices—are hard to identify, and one might reasonably be suspicious about the likely success of alleged predatory policies. More frequently, policymakers will have to weigh the benefits that accrue to U.S. consumers against the costs borne by U.S. producers as a consequence of foreign policies of industrial support. Making such assessments will never be easy, of course, but it would certainly be wrong to conclude that any foreign policy that threatens or appears to threaten U.S. producers is automatically contrary to broader U.S. interests. If foreign taxpayers are indirectly providing a subsidy

[18]This monopoly position might be achieved immediately—as when foreign firms come to dominate an emerging market—or at some later date when subsidized foreign production may eventually succeed in driving competitors out of business, thus creating a future monopoly.

to U.S. consumers, sometimes the right policy course will be to remain silent and to enjoy the good fortune.

A Special Role for the United States?

The above arguments have a troublingly asymmetrical character: It might be advantageous for the United States to subsidize or otherwise encourage industries that show economies of scale. At the same time, it should be suspicious when other countries do likewise. In the military sphere, of course, the United States is used to taking actions (building forces, etc.) that it would correctly view as threatening if undertaken by another country. But it has also long recognized that its security can be enhanced if all nations forswear certain actions. A similar case might be made with regard to industrial or technological subsidies and assistance.

As the world's largest economy, the United States does have a special role to play in setting the standard for correct international economic behavior. Resisting the temptation to capture an international advantage for a single U.S. industry is not necessarily an act of idealistic naiveté. If the United States openly pursues advantages for its own industries at whatever cost to the rest of the world, it is hard to imagine what arguments could be advanced in favor of restraint in other countries. The mechanisms for governmental intervention in economic affairs are, fortunately, poorly developed in the United States compared to most other nations. There is little reason to believe that a world in which all governments worked hard to capture a special advantage for their own industries would be a world that would favor U.S. interests, either absolutely or relatively.

This is not to argue that U.S. restraint from aggressive rent-seeking industrial policy will necessarily foster similar restraint worldwide. (That *would* be naive.) It is to suggest, though, that if the United States does not show such restraint, few other countries are likely to do so. U.S. restraint with respect to tariffs and competitive exchange-rate devaluations during the past 50 years has contributed to at least a rough international rejection of the most blatant beggar-thy-neighbor policies. The result has been an expansion of world trade that has benefited the United States. Perhaps U.S. leadership with respect to industrial subsidies will have a similarly salubrious effect.

We might go a step further, to turn some of the arguments common today on their heads. It has long been recognized that in some instances government subsidies or other assistance to particular industries is desirable. In the right circumstances, such assistance can improve overall welfare. But why should U.S. taxpayers clamor for the U.S. government to spend their taxes to produce what may be a worldwide public good? Consider, for example, biomedical research. Considerable sums of U.S. tax dollars support advanced biomedical research. The benefits of this research reach patients all over the world, patients who have contributed nothing to its pursuit. Rather than demanding further U.S. government support for biomedical research on the strength of the dubious assumption that this support will somehow maintain the primacy of some U.S.-based pharmaceutical or medical equipment firms, should we not instead be calling for other governments to pay their fair share? We have become accustomed to the notion that the burdens of common defense must be shared. Why not international burdensharing for biomedical research? But if it comes to that, why not ask other nations to share in the cost of producing a nonpolluting car or better communication technologies?

Protecting U.S. Interests

Although we may have doubts about whether policies designed to promote particular industries will ultimately prove beneficial for the countries adopting them, there is no question that these policies can damage the interests of firms and workers in other countries. It will be no consolation to U.S. workers who have lost jobs or firms that have been driven out of business because of foreign subsidies to learn years later that these subsidies did more harm than good to the foreign economies that offered them. Clearly, the pursuit of U.S. economic security will on occasion require action to discourage aggressive subsidization or protection of particular industries.

Fighting fire with fire and instituting a U.S. policy of industrial support is not obviously the best course. To borrow an analogy from thinking about military security, industrial subsidization and protection are similar to building military forces. The United States may gain a temporary advantage over other countries if it subsidizes more heavily than they do. But if other countries respond by offering yet more support for their own industries, the U.S. advantage is eroded. In the extreme, the United States could see the commercial equivalent of an arms race. Government support for a few industrial sectors thought to be key for future economic success would grow continually; economies would become more and more distorted as resources were poured into these "strategic" industries; and at the end of the day, because each move had been countered by foreign responses, no country would have much to show for its efforts.

The United States has learned through years of military competition that it is sometimes desirable or necessary to engage in arms races, principally to convince an adversary that the United States will do whatever is necessary to counter policies it views as detrimental to its interests. If this adversary is convinced that it is impossible to gain a lasting advantage, the temptation to seek an advantage may be lessened or removed. Much better, though, for all countries concerned to agree not to embark on an arms race in the first place. Perhaps this way of thinking should become more common with regard to commercial matters, with the major industrialized nations mutually agreeing to forswear specifically targeted programs of industrial support and concentrating instead on creating a general economic climate that is conducive to growth.

Another useful policy lesson may be drawn from our experience with military competition. In the military sphere, countries often seek to build their military capabilities first in those areas where they believe themselves to have a strong natural advantage. It is often unwise for another country to attempt to counter this kind of build-up directly; to do so would be to agree to play a game in which one's opponent enjoys an advantage. The collapse of the Soviet Union, for example, may have been hastened by the Soviet decision to engage in an extremely costly attempt to compete with U.S. R&D in advanced military technologies, where the United States enjoyed a clear technological advantage. A better course is often for other countries to counter the original build-up indirectly, concentrating on the things that they do best and hoping for a chance someday to trade reductions in unlike systems. Rather than seeking to match the massive armored forces of the Warsaw Pact, for example, the NATO allies sought to create effective anti-tank weapons.

The analogy to international commercial policy lies in the question of whether it is typically a wise policy to counter foreign industrial subsidies and support with subsidies and support in the same industries. In building military forces, the ultimate objective is not always to have bigger military forces. Sometimes, it is to discourage other nations from building bigger military forces. Similarly, in the commercial sphere, the ultimate objective should not be to subsidize a particular U.S. industry as heavily as its foreign competition is subsidized. Instead, the aim should be to discourage foreign subsidies. This aim may not always be most effectively achieved by countering foreign subsidies directly with U.S. subsidies in the same industry. Although a policy of direct confrontation will sometimes be required, a preferable course may be to respond with support for some other industry. If the Japanese are already using public funds to support Japanese makers of, say, memory chips, the prospects that a U.S. government response will prove beneficial may be increased if it is concentrated in an industry where prices are not already being depressed by forced expansion of foreign production. If the main purpose of U.S. industrial support is to create a bargaining chip (as opposed to a microelectronic one) that will encourage foreign governments to give up their own subsidy programs, then we may be well advised to create this chip in an industry where U.S. producers already enjoy some advantage.[19]

MAINTAINING AN ADEQUATE MILITARY

With the collapse of the Soviet empire and the end of the Cold War, the military threats confronting the United States have clearly declined. The world remains a dangerous place, however, and sometimes the only way to protect or to advance U.S. national interests—economic or otherwise—is through the application of military force. Although presumably needing a smaller military today than in the recent past, the United States will have to maintain substantial and highly capable military forces for the foreseeable future.

[19]Such subsidization may engender awkward political problems. How will we choose which industry is lucky enough to become our bargaining chip and receive the associated subsidy? Perhaps one of the attractions of meeting a foreign subsidy with a matching subsidy in the same industry is that such a policy apparently (but not, of course, really) spares U.S. policymakers from having to make tricky choices.

Military strength, of course, requires an economic underpinning. The most basic requirement is that the United States maintain a level of general economic output that allows diversion of some resources to military uses. The collapse of the Soviet Union as a military superpower provides a stark example of how general economic failure can defeat even the most determined national-defense efforts. In a democracy, the effects of poor economic performance on the ability to maintain military capability will typically be more subtle but no less real. Sluggish economic performance will result in increased competition for available resources and pressure to reduce "unnecessary" defense spending so that resources can be used for other purposes. Robust economic growth will not eliminate all opposition to defense spending, of course, but the prospects for ensuring that adequate resources are devoted to the defense effort must certainly be improved when output is expanding rapidly and more resources are available for all purposes.

Fostering Technological Innovation

At a more microeconomic level, maintaining an effective military may be easier or more certain if some specific industrial capabilities are maintained. Perhaps prime among these will be the capability to design and to produce successive generations of technologically sophisticated weapons. Throughout the Cold-War era, U.S. military doctrine and the U.S. military posture have reflected a reliance on technologically sophisticated weaponry. In some cases, technological sophistication was necessary to offset the superior numbers of enemy forces (as in the Cold War confrontations with the Warsaw Pact). This was a wise choice, given U.S. capabilities relative to other nations, to produce quality versus quantity. U.S. reliance on technology also reflects an understandable reluctance to risk U.S. lives in pursuit of military goals. Much better to use fewer soldiers and more equipment. For these same reasons, a reliance on technological superiority in the military sphere will remain a sound strategy for the foreseeable future.

Technical superiority in the military sphere should probably extend over presumed allies, as well as over potential adversaries. Politics sometimes changes more rapidly than technology, and today's technologically sophisticated ally may become tomorrow's technologi-

cally sophisticated adversary—before a new generation of military hardware can be designed, built, and deployed. And it will always be easier to control the spread of advanced weapon systems if they are produced in the United States. Even steadfast allies may occasionally have ideas different from those of the United States about which other countries can be permitted access to sophisticated weaponry. More broadly, maintaining the technical superiority of U.S. military systems will probably yield some political leverage. If other nations must come to the United States to gain access to the most capable weapon systems in the world, they may be more inclined to conform their actions to U.S. wishes.

Even when U.S. technology appears to be superior to that found elsewhere, it will be prudent for U.S. arms makers to continue to innovate and improve. Technological progress, particularly militarily relevant technological progress, is not always apparent. As more and more countries gain the technological sophistication to build highly capable weapon systems, the need to protect against technological surprise becomes more pressing. Also, if U.S. forces enjoy a clear technological advantage over the forces of other nations, and if the U.S. defense industrial base is recognized as being able to maintain this lead, other nations may be deterred from mounting efforts to surpass the technological capabilities of U.S. forces.

But how is the United States to pursue this technological superiority? One approach is to try to identify those particular technologies that are key to the ability to field superior military equipment and then to provide through government channels whatever support is required to keep the United States ahead of other countries in these areas. Behind this approach is the realization that the United States today is not, cannot be, and should not attempt to be the international leader in all technological areas. Instead, the United States should target its resources on those technological areas where foreign superiority might prove militarily troublesome.

But how to do this? It is far from clear that compiling, *ex ante*, lists of especially worthy or promising technologies and then trying to foster their development is really the most fruitful way to pursue militarily relevant technical superiority. First, there are severe analytical difficulties in trying to define which technologies are really critical to the production of sophisticated weaponry. It is not unduly uncharitable

to characterize the lists of critical technologies compiled to date as representing little more than a consensus of intuitions among people experienced in the design of modern weapon systems. In none of these cases have clear and objective criteria for "criticality" been proposed and applied. Perhaps no such criteria can be devised. Second, providing government support for specific kinds of research or for specific industrial processes is issuing an invitation for special pleading. Claims that one or another technology is essential to preserving the military might of the United States will become the last (and in some cases the first) refuge of every industrial special interest. Government agencies have not distinguished themselves in the past by being able to resist such claims. Third, having once identified a critical technology, there is still the problem of deciding what kind of government action will in fact encourage innovation. Simply providing financial support is not always adequate or even helpful.

Finally, relying on government agencies to identify and to support critical technologies may impart an unwanted conservative bias to technology policy. A public institution distributing public funds will have to document its reasons for acting as it does. Establishing a clear rationale for supporting technologies that do not yet exist or are in only the earliest stages of their developments will inevitably be difficult. Further, the people most closely associated with nascent technologies and possessing the clearest understanding of what these technologies may be able to achieve may be relative newcomers and less likely than experts in better established technologies to have the professional stature, the kinds of track records, and (more cynically) the political clout necessary to be appointed to governmental advisory panels. For both reasons, advisory panels and government agencies may have a tendency to err on the side of established technologies rather than take a gamble on something less certain. Yet it is precisely the latter sort of technologies that may provide the greatest return for a modest investment of public money. These may also be the technologies for which it is most difficult to attract commercial financing. By trying to identify particular technology areas as worthy of special support, one may end up placing one's bets on the technologies of the present rather than those of the future.

An alternative approach to choosing specific technologies as particularly critical is creating a general environment that will foster inno-

vation in the defense industrial base. It has been only in the last few years that serious attention has been turned to understanding the process by which sophisticated weapon systems are designed and built. There is still considerable controversy over which steps in this process are truly critical. Is it, perhaps, quite acceptable for basic scientific and technological progress to be spread around the world as long as the United States retains the skilled engineering design teams that can combine scientific and engineering know-how to create a new generation of sophisticated military equipment? Or can these design teams function effectively only if they maintain close contact with bench scientists and component designers, so that they can anticipate innovations and incorporate the very latest advances? If the latter, is the necessary contact possible if innovations and new components are being developed abroad? And if we are convinced that some kinds of basic research must be done here, how can government policies encourage the necessary research? Can military acquisition policies be adjusted so as to encourage more innovation or to make better use of innovations generated in the civilian economy? Most important of all, is it useful to think about designing policies specifically to encourage innovation in the defense-goods sector, or is militarily relevant innovation achieved reliably only if the entire economy is good at generating innovation? Opinions about these matters are as strongly held as they are varied. To date, however, there has been little systematic exploration of these questions, and this must become a high-priority area for defense analysis in coming years.

Foreign Sourcing

Considerable debate has also arisen over the wisdom of depending on foreign suppliers for militarily relevant products. The United States has a clear interest in spending limited defense budgets wisely, in not squandering resources. In the absence of special considerations, buying from a high-cost domestic supplier when a lower-cost foreign supplier is available cannot serve the national interest of maintaining an effective military.

Special considerations will necessarily apply somewhat idiosyncratically to particular items. It is possible, however, to establish some general guidelines for when domestic production should be prefered.

The United States should not, for example, depend on foreigners for products or designs the detailed workings and operational specifications of which need to be kept secret. (For example, the United States should not rely on foreign suppliers for acoustic gear used in antisubmarine operations.) Neither should it encourage, through it purchases, foreign production of the most sophisticated versions of operational equipment. The U.S. ability to control the flow of foreign-produced products is limited, and we will probably find that the higher costs of domestic production will be a small price to pay to make the proliferation of sophisticated weaponry less likely. (International coproduction arrangements for the new F-22 fighter, its radars, or its avionics suite, for example, are probably not wise.) The United States should not depend on foreign suppliers if a supply interruption could seriously degrade its ability to field or operate military forces.[20]

Although this last proposition may seem obvious, it probably provides little operational policy guidance today. The U.S. economy is very broad, and given enough time, it is undoubtedly capable of producing any product manufactured anywhere in the world. Thus, to oppose dependence on foreign suppliers, it is necessary also to argue that a supply interruption would have an important effect on military capabilities in the short run, before a new domestic source could be brought on line. Devising plausible scenarios that could result in such situations is not easy.

A more sophisticated version of this objection to reliance on foreign suppliers is the assertion that U.S. forces or U.S. defense contractors may not enjoy access to the very latest versions of foreign-produced components and may therefore find themselves a technological step behind the world standard. In civilian markets where the time be-

[20]The possibility that the supply of some militarily essential item may be interrupted is not, in itself, a sufficient reason to protect the operations of a high-priced U.S. producer. Continued purchases from a lower-priced foreign producer may be quite acceptable if it is possible to buy some form of "insurance" against a supply interruption. For some items, this insurance may take the form of stockpiling. In others, the insurance may be provided by opportunities to divert civilian production to military purposes in a time of crisis. For a fuller discussion, see Benjamin Zycher, Kenneth A. Solomon, and Loren Yager, *An "Adequate Insurance" Approach to Critical Dependencies of the Department of Defense*, Santa Monica, Calif.: RAND, R-3880-DARPA, 1991.

tween product generations is one or two years, a delay of a few months in getting access to the latest designs or components could be important. But the time between generations of military hardware is more often on the order of 10, 15, or even 20 years. Conventional wisdom also has it that components found in military systems are typically not as advanced as those found in civilian products sold in highly competitive civilian markets. In these circumstances, it is difficult to imagine that short-lived limitations on access to the very latest technology will be of much military significance.

For the routine supply of most military items, then, it seems unreasonable to insist on domestic production if foreign production will provide the needed goods more cheaply. As defense procurement spending shrinks in coming years and as the firms that make up the U.S. defense industrial base merge or go out of business, foreign suppliers of some defense goods may provide a welcome source of competition to the remaining U.S. suppliers and thereby save the Department of Defense (DoD) or upper-tier U.S. defense contractors from becoming overly dependent on domestic monopolists.

Rebuilding U.S. Military Forces

A defense industrial base that is able to do nothing more than meet the routine, noncrisis needs of the U.S. military, though, will not be adequate. Maintaining an effective military will also require maintaining the industrial capability to expand U.S. forces quickly, to replace lost equipment, or to replenish stocks of expendables. There is some evidence that modest efforts to encourage "smart" shutdown of current production lines—with tools and dies carefully stored and important know-how preserved (by, for example, videotaping the entire manufacture of the last production item)—can make possible much faster and less expensive reopening of these lines at some time in the future.[21] When surge demands must be met by production of new systems, it will be important to have designs for new systems "on the shelf," already tested at the prototype stage, and ready to go into production. From the beginning, these systems should be designed to facilitate rapid production start-up, making use when possible of components, manufacturing equipment, and labor-force skills that can be drawn easily from civilian production.

[21]John Birkler, Joseph Large, Giles Smith, and Fred Timson, *Reconstituting a Production Capability: Past Experience, Restart Criteria, and Suggested Policies*, Santa Monica, Calif.: RAND, MR-273-ACQ, 1993.

Thus, any capability for rapidly expanded defense production requires a reservoir of components, equipment, and skilled labor in the civilian sector that can be drawn on for defense production if the need arises. One might imagine creating an industrial equivalent of the Civil Reserve Air Fleet (CRAF), through which the federal government provides modest subsidies to civilian industries to maintain certain equipment and labor-force skills likely to be of value if defense production had to be quickly increased. In return for the government subsidies, participating manufacturers would have to agree, for example, to maintain equipment in particular configurations (perhaps somewhat less than optimal for civilian use) or to give workers a small amount of time to maintain skills that may not be in current use and to agree to transfer this equipment and these workers to defense production when required by the government. Such programs, however, would presumably be practical for only a few easily specified types of equipment or work skills. For the most part, the reservoir from which resources for expanded military production will be drawn will be the general economy. Thus, the best guarantee that a surge in defense production will be possible will be provided by a productive, technologically sophisticated manufacturing sector staffed by skilled and flexible workers.

More caution may be required in relying on foreign suppliers for significantly expanded production than for routine procurement of military goods. A need for surge production may arise, one supposes, in times of international tension, and it is precisely at such times that foreign supply may be undependable. But even for surge purposes, foreign supply should not be ruled out entirely. The more firms or factories an item is bought from, the more opportunities there will be for increased production in a crisis. Spreading production of a key item to many suppliers—some of them perhaps foreign—may increase the surge capacity. Even domestic supply, after all, is not completely reliable. Immune, presumably, to politically motivated interruptions, domestic supplies are still vulnerable to technical, mechanical, or managerial failures. A network of potential suppliers, some of them foreign, may provide better insurance

of supply in a crisis than a smaller network of purely domestic suppliers.

FOREIGN INVESTMENT IN THE UNITED STATES

Some concern has arisen in recent years over the actual or potential acquisition of U.S. assets—firms, financial instruments, buildings, farm land, even baseball teams—by foreigners.[22] At some visceral level, we harbor suspicions about consequences of such acquisitions. After all, when a foreigner outbids an American for some American asset, does not control of that asset pass from the former American owner to a new foreign owner? Does this not threaten our ability to "control our own economic destiny?"

For the most part, fears of foreign purchases of assets in the United States are unfounded. Fixed assets (factories, buildings, land, etc.) cannot, after all, be taken back to the new owner's native country. These assets remain in the United States providing jobs for U.S. workers and generating tax revenues for U.S. governments, just as if they were owned by U.S. citizens. Foreign owners operating assets in the United States are subject to all the laws of the United States. Foreign owners who violate these laws risk, ultimately, the loss of their assets. Indeed, it is not entirely clear who gains control over whom as a result of foreign purchases of fixed assets in the United States. To the extent that foreign investment in the United States results in the creation of new fixed assets, this investment may raise the productivity and the wages of U.S. workers and lead to higher total output in the U.S. economy.[23]

Laws governing the operation of business in the United States are not perfect, of course, and it is conceivable that a foreign owner of a U.S. factory or firm might operate that factory or firm in a manner

[22]For a thorough and insightful discussion of the issues of foreign investment in the United States, Edward M. Graham and Paul R. Krugman, *Foreign Direct Investment in the United States*, 2nd ed., Institute for International Economics, 1991.

[23]It is ironic, to say the least, that some of the same people who oppose foreign investment in the United States also complain about the "export of American jobs" that results from investments by American firms in other countries. You cannot have it both ways. If we lose something when a foreigner invests here, then logically we must gain something when Americans invest abroad.

that, although legal, we might find undesirable. A foreign-owned firm might, for example, reserve all senior management positions for citizens of the home country, thereby denying Americans the experience necessary to increase their job skills. A foreign-owned firm might transfer all R&D activities to the home country, thereby depriving the United States of some of the potential "spillover" benefits that may be generated by R&D activity. Foreign-owned firms might prefer to buy intermediate products and services from home-country suppliers, thereby reducing demand for U.S.-made substitutes. But a U.S. owner would also be free to engage in exactly these same practices. Anecdotes abound regarding alleged differences in behavior between U.S.-owned and foreign-owned firms in the United States, but to date there is no evidence of systematic differences in behavior. Research in this area is far from conclusive, but as far as we can tell today, there is no reason to believe that a Japanese foreman or a German landlord is any more difficult to deal with than his or her U.S. counterpart.

In a few industries where the United States attaches special importance to verifying the reliability, the judgment, or the *bona fides* of owners, it might reasonably resist acquisitions by foreigners. This is not because foreigners are believed to be less competent or more corrupt than U.S. resident, but simply because it may be much harder for U.S. authorities to investigate fully the background or past performance of someone whose previous activities have been conducted largely outside this country. This is why, for example, the U.S. government subjects would-be foreign purchasers of U.S. banks to special scrutiny and restrictions. Almost certainly, though, the government currently carries such restrictions too far. What danger does the United States run in allowing foreign ownership of U.S. air carriers[24] or of U.S. television stations?

The United States might also reasonably object to foreign acquisitions of some nonfixed and therefore transferable assets. Many

[24]Although restrictions on foreign ownership of U.S. air carriers had their origins in concerns about the dangers of foreign control of "strategic" transportation resources, these restrictions have been used in recent years as bargaining chips to gain improved access to foreign air transport markets by U.S. carriers. Whether or not these efforts will finally prove successful remains to be seen. However, increased opportunities for foreign ownership might promote increased competition in the U.S. market, to the benefit of U.S. consumers.

countries, for example, prohibit the sale to foreigners (or, more technically, the removal from the country) of certain kinds of artistic treasures. The rationale here, of course, is that these treasures must be seen to be enjoyed, and their transfer abroad would deprive citizens in the source country of such enjoyment.

But what about other kinds of easily transferable assets? What about patents, know-how, and technical information? Here the question becomes more difficult. Is U.S. economic security enhanced by prohibiting the sale or transfer to foreigners of certain kinds of technical information? If the information is of clear military value, its sale or transfer should almost certainly be restricted. But what about so-called dual-use technologies, which have both military and commercial applications? Perhaps the correct test to use in such cases is whether or not the U.S. government would feel comfortable in allowing the products made with the technology in question to be sold abroad unless, of course, the technology in question is already available abroad. If the government fears the military consequences of allowing certain kinds of products to be sold abroad (advanced computers, say, or very sophisticated milling equipment), it should probably prohibit the sale to foreigners of the company producing these products or the technological information on which this production depends.[25] With regard to purely commercial technologies, it is hard to see any justification for prohibiting sales or transfers to foreigners. If a U.S. owner believes that he or she can profit more by turning over certain patents or processes to foreigners than by retaining and exploiting those patents and processes, and if the local exploitation of the patents or processes in question generates no substantial local external benefit, no American can be expected to gain as a consequence of restrictions on sales or transfers.

Finally, there seems no reason to believe that the sale of U.S. financial instruments to foreigners threatens U.S. national security in any appreciable way. Scenarios of financial turmoil that might be caused

[25]The (alleged) restrictiveness of U.S. export control laws is sometimes illustrated with the (usually untested) observation that it is sometimes easier to sell an entire company to a foreigner than it is to sell the products that company makes to the same foreigner. If this were true, something would be seriously amiss. If it is worth restricting the transfer of the product, it is worth restricting the transfer of the know-how that lies behind it.

by massive dumping of, say, U.S. treasury securities by foreign owners are better plot devices for movies and novels than they are realistic possibilities. Anyone trying to engage in a massive dumping operation would almost certainly suffer severe losses in the process, and it is therefore hard to imagine what motives would lie behind such actions. More to the point, though, it is far from certain that an attempt to sell large volumes of treasury securities would in fact cause serious financial disruption. If someone is selling large volumes of securities, someone else is necessarily buying them. The U.S. Treasury is largely indifferent about to whom it pays interest, and the transfer of bonds from one owner to another would be of little significance. Financial markets do not clear instantly, of course, and sudden, massive sales of securities might generate some volatile price and interest-rate movements for a short period of time. Monetary authorities in all the industrialized countries have means to counter financial-market instability, however, and disruptions are likely to be short lived. It is hard to contemplate any orchestrated sell-off by foreign owners of U.S. securities that comes close in size to the unorchestrated sell-off of securities that brought about the October 1987 plunge in world stock markets. After a few days of volatility, national and international financial markets returned to normal operations, and the October crash had no lasting ill effects on any national economy.